## Safety Criterion: 2.0 – 2

The following dose standards shall be applied to protect the public and workers from RPP-WTP chemical hazards.

| | |
|---|---|
| Releases impacting the offsite public | EPRG-2 limits (AIHA 1988, as amended) |
| Releases impacting the worker | EPRG-2 limits (AIHA 1988, as amended) |

### Implementing Codes and Standards

BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification

## Safety Criterion: 2.0 – 3

In addition to the dose limits specified for the public in Safety Criterion 2.0-1 Table 2-1, the dose in any unrestricted area from external sources shall not exceed 0.002 rem in any one hour.

### Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan~~
~~Section: 2.3 Compliance with 10 CFR 835, "Occupational Radiation Protection"~~
~~Section: 3.9.1.2 Radiation Shielding and Access Control Features~~
DOE G 441.1-2, Occupational ALARA Program Guide

### Regulatory Basis

*WAC 246-221 Radiation Protection Standards Location: 060 (1)*
*WAC 246-247 Radiation Protection – Air Emissions Location: Part 040 (2)*

# 5.0 Radiation Protection

**Safety Criterion: 5.0 – 1**

A Radiation Protection Program (RPP) compliant with 10 CFR 835 shall be developed and submitted for approval to DOE.

The RPP-WTP Radiological Controls Program shall address all items in 10 CFR 835 and the additional Safety Criteria provided in SRD Volume II Sections 5.1 and 5.2.

**Implementing Codes and Standards**

~~G 10 CFR 835/B1~~DOE G 441.1-1, Manangement and Administration of Radiation Protection Programs Guide

**Regulatory Basis**

*10 CFR 835 Occupational Radiation Protection Location: 101(a-f)*
*DOE/RL-96-0006 4.2.3.1 Radiation Protection-Radiation Protection Practices*
*DOE/RL-96-0006 4.3.2.1 Radiation Protection-Radiation Practices*
*DOE/RL-96-0006 4.3.2.2 Radiation Protection-Procedures and Monitoring*

## 5.1 Occupational Radiation Protection

**Safety Criterion: 5.1 – 1**

The following measures shall be implemented for each entry into a high radiation area:

(1) The area shall be surveyed as necessary during access to determine the exposure rates to which the individual is exposed.

(2) Each individual shall be provided a supplemental dosimetry device capable of providing an immediate indication of the individual's integrated dose during the entry.

**Implementing Codes and Standards**

NRC Regulatory Guide 8.8 Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable

**Safety Criterion: 5.1 – 3**

Written procedures shall be established and implemented to control accountable sealed radioactive sources.

Accountable sealed radioactive sources, or their storage containers or devices, shall be labeled.

Each accountable sealed radioactive source shall be inventoried at intervals not to exceed six months. The inventory shall establish the physical location of each accountable sealed radioactive source; verify the presence and adequacy of associated postings and labels; and establish the adequacy of storage locations, containers, and devices.

Except for sealed sources consisting solely of gaseous radioactive material or tritium, each accountable sealed radioactive source having an activity in excess of 0.005 mCi shall be subject to a source leak test upon receipt, when damage is suspected, and at intervals not to exceed six months. Source leak tests shall be capable of detecting radioactive material leakage equal to or exceeding 0.005 mCi.

If the source has been removed from service, it is not subject to periodic source leak testing. Such sources shall be stored in a controlled location, be subject to periodic inventory, and be source leak tested prior to being returned to service.

If the accountable sealed source is located in an area unsafe for human entry, the source is not subject to periodic inventory and leak testing.

An accountable sealed radioactive source found to be leaking radioactive material shall be controlled in a manner that prevents the escape of radioactive material to the workplace.

**Implementing Codes and Standards**

~~G-N-5400.9/M1~~DOE G 441.1-13, Sealed Radioactive Source Accountability and Control Guide

**Safety Criterion: 5.1 – 4**

Records shall be maintained as necessary to evaluate compliance with the requirements for sealed radioactive source written procedures, inventory, and source leak tests.

**Implementing Codes and Standards**

~~G-N-5400.9/M1~~DOE G 441.1-13, Sealed Radioactive Source Accountability and Control Guide

**Safety Criterion: 5.1 – 5**

Provisions must be made for the temporary storage, packaging, and handling of facility generated solid radioactive wastes to prevent the release of radioactive materials to the environment or radiation exposures in excess of specified limits.

**Implementing Codes and Standards**

NRC Regulatory Guide 8.8 Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable

**Safety Criterion: 5.1 – 6**

Each item or container of radioactive material must bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL". The label must also provide sufficient information (such as the radionuclide(s) present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment) to permit individuals handling or using the items or containers, or working in the vicinity of the items or containers, to take precautions to avoid or minimize exposures.

Prior to removal or disposal of empty uncontaminated containers to unrestricted areas, the radioactive material label shall be removed or defaced to clearly indicate that the container no longer contains radioactive materials.

Radioactive material labels are not required for:

(1) Containers holding licensed material in quantities less than the quantities listed in appendix C to 10 CFR 20; or

(2) Containers holding licensed material in concentrations less than those specified in Table 3 of appendix B to 10 CFR 20; or

(3) Containers attended by an individual who takes the precautions necessary to prevent the exposure of individuals in excess of the limits established by this part; or

(4) Containers when they are in transport and packaged and labeled in accordance with the regulations of the Department of Transportation, or

(5) Containers that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers, if the contents are identified to these individuals by a readily available written record (examples of containers of this type are containers in locations such as water-filled canals, storage vaults, or hot cells). The record must be retained as long as the containers are in use for the purpose indicated on the record; or

(6) Installed manufacturing or process equipment, such as piping and tanks.

**Implementing Codes and Standards**

~~G 10 CFR 835/G1~~DOE G 441.1-10, Posting and Labeling for Radi~~ation~~ological Control Guide

## Safety Criterion: 5.3 – 2

The ALARA Program shall ensure that releases of radioactive materials to the environment and exposures to the public during normal operations shall be kept ALARA and within prescribed limits.

### Implementing Codes and Standards

~~G 10 CFR 835/B2~~DOE G 441.1-2, Occupational ALARA Program Guide

### Regulatory Basis

*DOE/RL-96-0006 3.2 Radiation Protection Objective*
*DOE/RL-96-0006 4.2.3.2 Radiation Protection-Radiation Protection Features*
*WAC 173-480 Ambient Air Quality Standards and Emission Limits for Radionuclides Location: Part 050 (1)*

## Safety Criterion: 5.3 – 3

A waste management program shall ensure compliance with all applicable laws and regulations. The waste management program shall also ensure that the radiological impact to the general public and environment due to radioactive wastes arising from RPP-WTP operation shall be ALARA.

### Implementing Codes and Standards

IAEA Safety Series No. 50-SG-011, Operational Management for Radioactive Effluents and Wastes Arising in Nuclear Power Plants.
ANSI/ISO-14001-1996, Environmental Management Systems – Specifications with guidance for use

### Regulatory Basis

*DOE/RL-96-0006 3.2 Radiation Protection Objective*
*DOE/RL-96-0006 4.2.3.2 Radiation Protection-Radiation Protection Features*

# 8.0 Deactivation and Decommissioning

## Safety Criterion: 8.0 – 1

There shall be an approved plan for deactivation of the facility before it is constructed. The objectives of the plan shall be to reduce radiation exposure to Hanford Site personnel and the public both during and following deactivation and decommissioning activities and to minimize the quantity of radioactive waste generated during deactivation, decontamination, and decommissioning. Features and procedures that simplify and facilitate decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method.

### Implementing Codes and Standards

BNFL-5193-SRD-01 Safety Requirements Document
Appendix F, Ad Hoc Implementing Standard for Deactivation and Decommissioning Planning

### Regulatory Basis

*DOE/RL-96-0006 4.2.3.3 Radiation Protection-Deactivation, Decontamination, and Decommissioning Design*
*DOE/RL-96-0006 4.3.2.3 Radiation Protection-Final Deactivation Plans and Provisions*

## Safety Criterion: 8.0 – 2

Facilities shall be designed to simplify decontamination and decommissioning, reduce exposure to site personnel and the public during these activities, and increase the potential for reuse. Features and procedures that simplify and facilitate decontamination, decommissioning, and minimization of contaminated equipment and the generation of radioactive waste during deactivation, decontamination, and decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method or conversion to other use.

### Implementing Codes and Standards

BNFL-5193-SRD-01 Safety Requirements Document
Appendix F, Ad Hoc Implementing Standard for Deactivation and Decommissioning Planning
~~G – 10 CFR 835/B2~~DOE G 441.1-2, Occupational ALARA Program Guide

### Regulatory Basis

*10 CFR 835 Occupational Radiation Protection Location: 1002*
*DOE/RL-96-0006 4.2.3.3 Radiation Protection-Deactivation, Decontamination, and Decommissioning Design*
*DOE/RL-96-0006 4.3.2.3 Radiation Protection-Final Deactivation Plans and Provisions*

# 1.0 Introduction

All elements of the RPP-WTP safety approach are applied to the deactivation phase of the project. In addition, the RPP-WTP will incorporate design provisions to facilitate deactivation and final decommissioning as described in the implementing standard ~~G 10 CFR835/B2~~DOE G 441.1-2, *Occupational ALARA Program Guide*, for SRD Criterion 8.0 – 2. These provisions will reduce radiation exposure to Hanford Site personnel and the public during and following deactivation and decommissioning activities and minimize the quantity of radioactive waste generated during deactivation. The purpose of this standard is to define the attributes that must be addressed during the preparation of the deactivation plan to protect both the Hanford Site personnel and the public both during and after the deactivation stage of the project.

# 2.0 Plan Preparation

A deactivation plan will be prepared prior to construction of the RPP-WTP. The deactivation plan will provide details on how the following activities will be accomplished to achieve a deactivated status for the facility.

1) Verification of the completion of the facility deactivation end point. The term facility deactivation end point refers to the set of conditions that comprise the completion of facility deactivation i.e., radiological, structural, equipment, and documentation. These general end points will be defined in the deactivation plan and a requirement made to determine specific end points. When these end point criteria are met the facility will be in a safe state that can be economically monitored and maintained until final decommissioning.
2) Documentation of the regulatory status, conditions, and inventories of remaining radioactive and hazardous materials and health and safety requirements. After facility construction but before deactivation commences, the deactivation plan will require a hazard evaluation for radiological, nuclear, and process safety be carried out. Safety standards and requirements will be identified to implement the controls to protect against the facility hazards.
3) Identification of the facilities, structures, support systems, and surveillance systems to provide for confinement and monitoring of the remaining contamination, radiation, and other potential hazards. After facility construction but before deactivation commences, the plan will be expanded to describe the activities required to maintain the operability of critical equipment and to maintain the structural integrity of the deactivated facility. It will identify modification requirements to systems for the above purposes.
4) Posting and securing of the facility. After facility construction but before deactivation commences, the plan will be expanded to identify the radiological controls required for the deactivated facility, which will include posting of radiological areas. The need for other safety postings will also be identified.